REMARKS

I. Status and Disposition of the Claims

Claims 1-9 and 15 were previously canceled. By this Amendment, Applicants amend claim 10 to more clearly identify that which is claimed. Support for the amendments to claims 10 and 29 can be found, for example, at page 3, line 29 through page 4, line 3, at page 5, lines 25-31, and at page 9, lines 16-19 of the as-filed specification. Upon entry of this Amendment, claims 10-14, and 16-29 will be pending.

II. Claims Rejections Under 35 U.S.C. § 102(a)

Claims 10-14, and 16-29 are rejected under 35 U.S.C. § 102(a) as being anticipated by U.S. Patent Publication No. 2002/0182465 to Okamoto ("Okamoto"). *See* Final Office Action at 2-5. According to the Office, Okamoto discloses a fuel cell stack vaporizer having a fuel reformer comprising a sensor and control valve, a cleanup unit comprising a sensor and controller, a fluid conduit to the fuel cell having a pressure sensor, a temperature sensor used to determine the air amount to the reformer, and a third sensor based on electric power generated and accelerator depression. *Id.* at page 3. According to the Office, "[t]he control system as described by Okamoto is able to perform the same task as the claimed invention." *Id.* Based on those assertions, the Office states that Okamoto anticipates the claimed invention.

Applicants respectfully disagree and traverse the rejection. Under § 102, a claim is anticipated only if each and every element of the claim is disclosed by the asserted prior art reference. M.P.E.P. § 2131. In comparing the claims against the prior art "a functional limitation must be evaluated and considered, just like any other limitation of

the claim." *Id.* at § 2173.05(g). Here, Okamoto fails to disclose a control system configured to regulate the rate of the first fluid stream based upon feedback from the first sensor with a first time constant and regulate at least one of the second or third fluid stream with a time constant that is at least about three times greater than the time constant of regulation of the first fluid stream. Indeed, the Office implicitly acknowledge that Okamoto fails to disclose a control system configured in this manner.

For example, in comparing the present invention to the prior art, the Office states "[a]lthough they operate differently, the sensors are the same and the controllers operate in substantially the same manner since the system is given the necessary reactants when it is needed. The controller of the prior art is also capable of performing the same task of delaying the opening of valves since the prior arte teaches a complex system that responds to independent stimulus." *Id.* at page 4. Thus, the Office merely states that the controller of the prior art is capable of being configured in accordance with the present claims. However, merely finding that the controller of the prior art is ***capable*** of being configured in that manner is not enough to establish a rejection under § 102.

More importantly, however, is the fact that Okamoto expressly teaches a method using ***the same time constant*** for regulating ***all*** fluid inputs, thus teaching away from a control system configured in accordance with the present claims. For example, at paragraph [0057], after describing the complex algorithm used by the controller in regulating each of the inputs for each fluid in the system, Okamoto discloses:

> The controller 100 performs the above processing repeatedly at a predetermined interval, e.g., a hundred milliseconds to one second depending on the performance of the controller 100.

Thus, the regulation of every input of every fluid in Okamoto occurs with the same time constant. Moreover, when the detailed description of the regulation of the various air inputs is examined, it is clear that the regulation of each input in the Okamoto system must have the same time constant. At paragraph [0036], Okamoto states:

> The controller 100 controls the rotation speed of the compressor 11 so that the total air supply amount detected by the flowrate sensor 12 is equal to the total air amount supplied to the reformer 6, the carbon monoxide oxidizer 7 and the fuel cell stack 8.

Because the control system of Okamoto uses a single sensor to regulate the amount of fluid supplied to each of the three air inputs, the regulation of each of those inputs must occur with the same time constant. Accordingly, Okamoto fails to teach a control system configured in accordance with the present claims.

For at least the above reasons Applicants respectfully request the withdrawal of this rejection.

III. Claim Rejections Under 35 U.S.C. § 103(a)

A. Rejection of Claims 10-14 and 16-28

Claims 10-14 and 16-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0186096 to Keskula et al. ("Keskula") and further in view of Okamoto. *See* Final Office Action at 6-12. According to the Office, Kelskula discloses an air distribution method and controller for a fuel cell system comprising a fuel reforming unit having a fluid inlet, a hydrogen-cleanup unit having a fluid inlet and a fluid conduit for providing fuel to the fuel cell. *Id.* at pages 6-7. The Office states that the controller communicates with various mass airflow sensors to adjust the mass airflow controllers, thereby controlling airflow in the system. *Id.* at

page 7. According to the Office, "[t]he controller described in the prior art is capable of performing the claimed functionality." *Id.* The Office concedes that Kelskula fails to teach a system with a sensor that is not an air flow sensor. *Id.* at page 8.

For that the Office turns to Okamoto, stating that the rate of air flow to the reformer is determined based on the detection temperature of a temperature system. *Id.* at page 9. Based on that, the Office concludes that it would have been obvious for one of skill in the art to modify Kelskula with the teachings of Okamoto. Applicants disagree and traverse this rejection for at least the following reasons.

The Office bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. *See* M.P.E.P. § 2142. In *KSR Int'l Co. v. Teleflex Inc.*, 82 U.S.P.Q.2d 1385 (2007), the Supreme Court confirmed that the "framework for applying the statutory language of §103" is still based on its landmark decision in *Graham v. John Deere Co. of Kansas City*, 148 U.S.P.Q. 459 (1966). Under *Graham*, four factors are considered when determining whether an invention is obvious: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art; and (4) secondary considerations. 148 U.S.P.Q. at 467. The obviousness or non-obviousness of the claimed invention is then evaluated in view of the results of these inquiries. *See Graham*, 148 U.S.P.Q. 467; *see also KSR*, 82 U.S.P.Q. 2d at 1388. Implicit in this analysis is the requirement that the Office show that each and every element of the claims is disclosed in the prior art. M.P.E.P. § 2143.03.

As described above, Okamoto fails to disclose "a control system configured to regulate the rate of the first fluid stream based upon feedback from the first sensor with

a first time constant and regulate at least one of the second or third fluid stream with a time constant that is at least about three times greater than the time constant of regulation of the first fluid stream" as recited in claim 10. Indeed, because the Okamoto system requires a single time constant for the regulation of all fluid lines, it actually teaches away from a controller configured in accordance with the claims.

Keskula also fails to disclose a control system configured to regulate the rate of the first fluid stream based upon feedback from the first sensor with a first time constant and regulate at least one of the second or third fluid stream with a time constant that is at least about three times greater than the time constant of regulation of the first fluid stream. Like Okamoto, Kelskula discloses a controller that requires the regulation of all fluid lines to occur with a single same time constant:

> [t]he airflow controller 50 periodically polls the fuel cell subsystems 14 and requests the minimum air pressure that is required by each of the fuel cell subsystems 14. The fuel cell subsystems 14 provide the minimum required pressure . . . The airflow controller 50 controls the air pressure in the manifold 40 and/or tubing 22 to maintain the highest minimum required pressure for the fuel cell subsystems 14 until the subsequent polling period.

Paragraph [0024]. Thus, Keskula also teaches away from a control system configured in accordance with the claims.

Because the combination of Okamoto and Keskula fail to disclose every element of the present claims, and because both of those references teach away from certain elements of the claims, the rejection over those two references under § 103 is improper. Applicants, therefore, respectfully request this rejection be withdrawn.

IV. Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration of the application, and the timely allowance of the pending claims 10-14, and 16-29.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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